

## GENERAL NOTES

*Journal of the Lepidopterists' Society*  
48(3), 1994, 264-265

### SOMATIC MOSAICISM IN *MANIOLA JURTINA* (NYMPHALIDAE: SATYRINAE)

**Additional key words:** bilateral size asymmetry.

Spontaneously appearing perfectly or nearly perfectly bilaterally differentiated, but non-gynandrous, individuals are known chiefly in the silkworm (*Bombyx mori* L., Bombycidae), fruit fly (*Drosophila melanogaster* L., Drosophilidae), and honeybee (*Apis mellifera* L., Apidae), and in some domesticated vertebrates. Selected examples from butterflies include female *Papilio polytes* L. (Papilionidae) with one side of the sex-limited f. "romulus" Cramer and the opposite side of male-like f. "cyrus" Fabricius (Ollenbach 1930); half black/half yellow morph females of *Papilio glaucus* L. (Papilionidae) (for a review see Clarke & Clarke 1983, Scriber & Evans 1988); and male *Apatura ilia* (Den. & Schiff.) (Nymphalidae) with one side of f. "sylvia" Cabeau (Cockayne 1935). Apparently, asymmetries in butterflies involve mainly differences in wing pattern and coloration, and to a lesser extent, the shape and size of the wings. Some may represent cases of wing homoeosis (for a review see Sibatani 1980, 1983a, b).

The teratology described herein concerns exclusively the size of body halves. The example was found in the field stock of two thousand specimens of the meadow brown, *Maniola jurtina* (L.) (Nymphalidae: Satyrinae), collected in July 1968 near Jarocin, Poland (51°58'N, 17°29'E), among lowland herb communities of the class Molinio-Arrhenatheretea. The aberrant specimen is a female (not a latent gynander) with the right part of the body distinctly smaller than the left, exhibiting ca. 8% linear difference (Fig. 1). The halving proceeds about the entire median line, equally affecting all structures of the right side of the head (e.g., palpus, antenna, compound eye), thorax (e.g., legs, wings with their scales and markings), and abdomen. For instance, the length of the left forewing (from

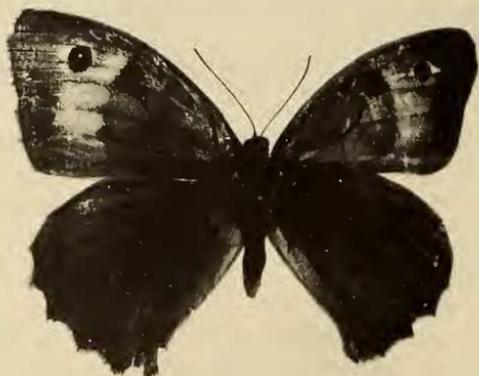


FIG. 1. Bipartite mosaic female of *M. jurtina*.

base of costa to apex) is 23 mm, whereas that of the right is 21 mm (usual wing length in Polish populations is 23–25 mm).

So far as I am aware, this represents the most obvious case of bilateral asymmetry in expression of insect body size, uncoupled with any other conspicuous asymmetric deviation, reported in the literature. The left-right difference in size is much more pronounced than that in bilateral gynandromorphs of *M. jurtina* figured by Barrington (1992), Albrecht (1993), or Eitschberger (1993).

As to their origin, "half-siders" in diploids are believed to result from point mutations, rearrangements, or malsegregation of chromosomes giving diversity at the first division of the zygote nucleus, or from double fertilization of a binucleate egg. In butterflies, mosaics thought to arise by polyspermy generally are gynandromorphic (preliminary separation of sister chromatids in meiosis) (Blanchard & Descimon 1988). Instead, non-disjunction of the homologues (i.e., XY/XO) recently has been proposed to be involved in appearance of the previously mentioned aberrations of *P. glaucus* (Clarke & Clarke 1983, Scriber & Evans 1988). Comparative analysis of chromosomal DNA derived from the two halves of the aberrant specimens like that reported here may help in mapping loci that affect insect growth.

#### LITERATURE CITED

- ALBRECHT, M. 1993. Ein gynandromorph von *Maniola jurtina* (Linnaeus, 1758) (Lepidoptera, Satyridae). *Atalanta* 24:57–58, 318–319.
- BARRINGTON, R. D. G. 1992. Additional notes on aberrations of the meadow brown (*Maniola jurtina* L.) from North Dorset. *Entomol. Rec. J. Var.* 104:315–319.
- BLANCHARD, R & H. DESCIMON. 1988. Hybridization between two species of swallowtails, meiosis mechanism, and the genesis of gynandromorphs. *J. Lepid. Soc.* 42:94–102.
- CLARKE, C. & F. M. M. CLARKE. 1983. Abnormalities of wing pattern in the eastern tiger swallowtail butterfly, *Papilio glaucus*. *Syst. Entomol.* 8:25–28.
- COCKAYNE, E. A. 1935. The origin of gynandromorphs in the Lepidoptera from binucleate ova. *Trans. Roy. Entomol. Soc. London* 83:509–521.
- EITSCHBERGER, U. 1993. Ein weiterer gynandromorph von *Maniola jurtina* (Linnaeus, 1758) (Lepidoptera, Satyridae). *Atalanta* 24:59–60, 318–319.
- OLLENBACH, O. C. 1930. Miscellaneous notes. XXIII.—A freak *Papilio polytes romulus* Cr. ♀. *J. Bombay Nat. Hist. Soc.* 34:832–833.
- SCRIBER, J. M. & M. H. EVANS. 1988. Bilateral gynandromorphs, sexual and/or color mosaics in the tiger swallowtail butterfly, *Papilio glaucus* (Lepidoptera: Papilionidae). *J. Res. Lepid.* 26:39–57.
- SIBATANI, A. 1980. Wing homoeosis in Lepidoptera: A survey. *Devel. Biol.* 79:1–18.
- . 1983a. A compilation of data on wing homoeosis in Lepidoptera. *J. Res. Lepid.* 22:1–46.
- . 1983b. Compilation of data on wing homoeosis on Lepidoptera: Supplement I. *J. Res. Lepid.* 22:118–125.

PRZEMYSŁAW SZAFRAŃSKI, *Boston University, Center for Advanced Biotechnology, 36 Cummington Street, Boston, Massachusetts 02215, USA.*

*Received for publication 1 May 1993; revised and accepted 28 November 1993.*